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PRIMARY CARE PHYSICIANS ONLY MODERATELY CONFIDENT IN DECIDING WHICH PATIENTS TO REFER FOR TOTAL JOINT ARTHROPLASTY OF THE HIP AND KNEE

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Purpose: Total joint arthroplasty (TJA) is highly effective in the management of advanced hip and knee osteoarthritis (OA), when non-surgical therapies fail. Our prior research demonstrated under-use of TJA among individuals aged 55+ years with moderate to severe hip/knee OA. Recently, with increasing longevity and obesity, and secular trends in perceptions of TJA from one of 'managing disability' to 'disability prevention', concerns have been raised about possible overuse of TJA. In Canada, primary care physicians (PCPs) are responsible for referrals to orthopaedic surgery for TJA. Thus, inappropriate under- or over-use of TJA may be partly a consequence of uncertainty among PCPs about indications for TJA. We sought to determine the level of confidence among PCPs in deciding which patients to refer for TJA and to identify key PCP characteristics associated with their reported confidence.

Methods: PCPs were recruited from among those providing care to participants of an established community cohort with hip/knee OA in Ontario, Canada. Physicians completed a mailed or online questionnaire. Information collected included demographic and practice characteristics, and their perceptions regarding indications, contraindications, barriers, risks and effectiveness of TJA. Level of confidence was measured from 1, 'not confident at all' to 10, 'highly confident' in response to the question "How confident are you in deciding which patients should be referred to orthopaedic surgery for consideration of hip or knee replacement?" They were asked to indicate whether "lack of clarity regarding indications for surgery is a factor discouraging them from referring patients for TJA" (not at all/rarely/sometimes/often/all the time). Descriptive analyses were conducted using proportions, means, medians as appropriate. Multiple linear regression was used to determine the key independent variables associated with level of confidence.

Results: 214 physicians participated (58% response rate) (64.6% aged 50+ years, 45% female, 77% > 15 years of practice, 67.5% urban practice location vs. rural, 62.7% group vs. solo practice, 30.2% in academic practice). The majority (67.5%) reported seeing ≤ 10 patients with moderate to severe hip/knee OA in the previous 2 weeks; 5.7% reported seeing > 20 patients. One-third (35%) referred ≤ 5 patients/year for TJA surgical consult; 30.7% referred > 10 patients/year. Compared with male respondents, female physicians were more likely to have practiced ≤ 15 years ($p < 0.0001$), report seeing fewer OA patients ($p = 0.0004$), practice in an urban location ($p = 0.003$), and be in an academic ($p = 0.03$) or group practice ($p = 0.003$). 44% of respondents reported "lack of clarity regarding surgical indications" sometimes/often/all the time. Lack of clarity was associated with fewer years of practice ($p = 0.017$). The average response on the confidence scale was 6.95 ± 1.60 (range: 1–10) indicating a moderate level of confidence in deciding which patients to refer for TJA. In bivariate analysis, a lower confidence level was associated with sex (female) ($p = 0.0001$), ≤ 15 years of practice ($p = 0.004$), group practice ($p = 0.0025$), and lack of clarity regarding indications for surgery ($p < 0.0001$). Confidence was not associated with volume of OA patients or number of referrals for TJA surgical consult. In multivariable analysis, lower confidence was significantly associated

with female sex ($\beta = 0.60$, 95%CI: 0.18–1.02, $p = 0.005$) and reporting lack of clarity of surgical indications ($\beta = 1.05$, 95% CI: 0.65–1.45, $p < 0.0001$).

Conclusion: Our results emphasize the need among PCPs for increased guidance regarding indications for TJA to increase their level of confidence in their decision-making process. This may be particularly beneficial for physicians with fewer years of clinical experience. Ultimately, improved decision-making may contribute to better surgical outcomes through better selection of appropriate candidates.

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"IT'S PART OF WHO I AM NOW:" A QUALITATIVE ANALYSIS EXPLORING THE IMPACT OF SPORT-RELATED KNEE JOINT INJURY ON YOUNG ADULTS' PERSPECTIVES OF PHYSICAL ACTIVITY AND OSTEOARTHRITIS

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Purpose: To understand the experience of young adults who sustained a sport-related intra-articular knee joint injury 3 to 10 years previously as adolescents and its impact on their current attitudes and beliefs about physical activity and osteoarthritis.

Methods: Employing qualitative methods guided by grounded theory, this study explored the experiences of injury among youth sport participants. Semi-structured in-depth interviews were conducted with a purposive sample of young adults who sustained an intra-articular knee injury in the past 3 to 10 years during sport participation (median years since injury=7.0, range=4.3, 9.7). Participants were recruited from within a larger historical cohort study where quantitative data was collected on numerous clinical, structural, physiological, and behavioural long-term knee injury outcomes conducted at the Sport Injury Prevention Research Centre, University of Calgary. Selection aimed to recruit a sample that included individuals from both sexes whose current level of physical activity ranged from a low to high participation based on the Godin-Shephard Leisure-Time Physical Activity Questionnaire. Additionally, participants with more severe injuries were targeted in an attempt to recruit interviewees whose knee injury had resulted in a greater personal impact. Interviews were recorded and transcribed verbatim. Data analysis used a constant comparative method to develop conceptual labels and categories, axial coding, and selective coding to reveal main themes. NVivo 10 software was used to manage and organize the data.

Results: Thirteen one-on-one interviews were conducted with nine women and four men (ages 16 to 26 years old). Findings revealed participants had embraced a sense of acceptance of their knee injury both in relation to its influence on their athletic potential and the possibility of future knee osteoarthritis. They expressed how their knee required protection and ongoing self-evaluation before engaging in certain activities. Participants' athletic identity was evolving, influenced by their knee injury, as well as other factors such as shifting life priorities.

Conclusions: This study provides novel insight into the attitudes and beliefs of young adults who have sustained a sport-related knee injury. Rehabilitation professionals should consider the psychological aspects of the injury experience in youth. Education supporting positive beliefs and addressing concerns about osteoarthritis in young adults with a history of intra-articular knee injury may aid in promoting their future joint health. These results will inform the development of strategies in how best to address the psychological aspects of knee injury.

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CHARACTERISTICS OF CHECK (COHORT HIP & COHORT KNEE): AFTER 7 YEARS OF FOLLOW-UP

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Purpose: The Cohort Hip & Cohort Knee (CHECK) study included participants with early symptomatic osteoarthritis (OA) and studied changes in clinical, radiological and biochemical variables. We present the results of 7 years of follow up.

Methods: Between October 2002 and September 2005 a cohort was formed of 1002 participants aged 45–65 years with symptomatic OA

characterized by pain and/ or stiffness of knee and/ or hip. They were included at the first visit or within 6 months of the first visit to the general practitioner for these symptoms. Study centers comprise ten general and university hospitals located in urbanized and semi-urbanized regions in the Netherlands. A special program was developed to minimize loss to follow up, comprising newsletters, website and organizing symposia to present the results and progress of CHECK. An overview of measures that are included in the study can be found at our website www.check-research.com.

Results: After 7 years a total of 105 (10%) participants had dropped out. Reasons included loss of interest (21%), comorbidity that complicated participating of CHECK too much (18%), death (12%), contact lost (11%), costs incurred for the study (5%), and other reasons (33%). Dropouts did not differ significantly from other participants in baseline characteristics. Over 7 years follow-up clinical characteristics including pain, stiffness and function of disease-specific (WOMAC) and the subscales of generic self-report questionnaire (SF36) on average did not change significantly, although at least half of the patients experienced radiographic progression. Scoring of 5-year follow up is complete: at this point, 50 % of the participants progressed by at least one Kellgren and Lawrence grade in the knee, and 25% in the hip. Preliminary analyses suggest the existence of several clinical and radiological phenotypes.

Conclusions: CHECK is a valuable source of information of early symptomatic OA with a low loss to follow-up and a multidisciplinary approach that allows the collections of high-quality data on clinical, radiological and biochemical variables.

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CALCIUM CRYSTALS DETECTED BY SCANNING ELECTRONIC MICROSCOPY IN SYNOVIAL FLUID OF PATIENTS WITH EARLY KNEE OSTEOARTHRITIS. RELATIONSHIPS WITH INFLAMMATION AND DISEASE SEVERITY

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Purpose: The presence of calcium crystals (CC) in synovial fluid (SF) of osteoarthritis (OA) is a well known and frequent feature. However, their role in the pathogenesis of OA is still unclear and matter of discussion, in particular as regard the local inflammation. The objective of the study was to evaluate the presence of the most common CC, calcium pyrophosphate (dehydrate) (CPP) and basic calcium phosphate (BCP), in SF of the symptomatic knee OA (KOA), particularly in early disease stage (<1year) and to investigate their association with local inflammation, disease activity and severity. We performed an ultrasensitive analysis of SF crystals using the scanning electron microscopy (SEM) and the routine method by compensated polarized light microscopy (CPLM) and alizarin red staining.

Methods: Seventy-four (48 F, mean age 64.85±9.33 yrs, range 50-89 yrs) consecutive outpatients attending the Rheumatology Unit, University of Padova with symptomatic KOA (according to the American College of Rheumatology criteria) underwent knee arthrocentesis. After optical and CPLM, the SF was analysed by SEM. Total white blood cell (WBC) count was performed and a cut-off of total WBC was established

in < 1000/mm³. Patients' medical history, clinical features (WOMAC, Lequense and VAS) X-ray findings (Kellgren & Lawrence), ultrasound and power Doppler (PD) signal values were also assessed.

Results: CPP crystals were identified in 32.4% by CPLM and in 31.1% by SEM. Alizarin was positive in 36.5% of the samples. BCP were found in 13.5% by SEM. CPP and BCP crystals were simultaneously positive in 8.1% of the samples by SEM. The study population was divided into three groups depending on disease duration (group A <1 yr; group B 1-5 yrs; group C > 5 yrs). The SF volume (p=0.0008) was significantly different in the group A with respect to B and C groups. The SF WBC was higher during the early stages of disease (group A), although not significant, with respect to B and C groups. Moreover, the presence of CC in group A correlated significantly with SF WBC (p=0.048) and % of PMN (p=0.033) with respect to those without CC in the same group. PD resulted positive in 43.24% of all the patients, 62.5% of these were CC+ according to SEM (p<0.0001).

Conclusions: The presence of CC in SF, also when detected in early OA stages, was associated with a higher degree of local inflammation, so suggesting that they may play a role of in eliciting an inflammatory reaction, which may be crucial in OA pathogenesis.

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A PHASE 3 RANDOMIZED CONTROLLED TRIAL OF LOWER-DOSE DICLOFENAC CAPSULES IN PATIENTS WITH OSTEOARTHRITIS PAIN: IMPACT ON PATIENT-REPORTED OUTCOMES

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Purpose: Non-steroidal anti-inflammatory drugs (NSAIDs) are frequently prescribed for management of osteoarthritis (OA) pain and diclofenac is the most frequently used prescription and over-the-counter NSAID worldwide. NSAIDs, including diclofenac, are associated with serious dose-related gastrointestinal, cardiovascular, and renal adverse events. As a result, the US Food and Drug Administration and international health authorities have encouraged the use of NSAIDs at the lowest effective dose for the shortest possible duration. Diclofenac submicron particle containing capsules (DSPCC) consisting of submicron drug particles and a proprietary combination of excipients were developed using SoluMatrix Fine Particle Technology to provide efficacy at lower doses than commercially available diclofenac drug products and are licensed for treatment of mild-to-moderate acute pain in adults. In a randomized controlled phase 3 trial (RCT) in patients with pain due to OA of the knee or hip, DSPCC 35 mg three times daily (TID) significantly reduced Western Ontario and McMaster University Osteoarthritis Index (WOMAC) pain subscale scores (P = 0.0024) compared with placebo, with non-statistical benefit for the BID dose (P = 0.0795). We present results of patient-reported outcomes from this study.

Methods: This 12-week RCT enrolled 305 patients 41 to 90 years of age with clinically and radiologically confirmed (Kellgren-Lawrence grade II-III) OA of hip or knee. Patients were chronic NSAID or acetaminophen users with WOMAC pain subscale scores ≥40 mm by 100-mm Visual Analog Scale at baseline and a documented OA flare (≥15-mm increase) following NSAID or acetaminophen discontinuation. Eligible patients

	DSPCC 35 mg TID (n = 98)	DSPCC 35 mg BID (n = 104)	Placebo (n = 103)
SF-36 Physical Component Score	(n = 94)	(n = 100)	(n = 100)
Mean change from baseline to week 12	7.58*	7.02*	3.87
SF-36 Domain Scores	(n = 94)	(n = 100)	(n = 100)
Physical functioning score mean change from baseline to week 12	5.99*	5.74*	2.83
Role physical score mean change from baseline to week 12	7.71*	6.60	4.39
Bodily pain score mean change from baseline to week 12	8.87*	9.25*	5.61
General health score mean change from baseline to week 12	2.19	0.92	1.29
Vitality score mean change from baseline to week 12	4.86*	4.49*	1.94
Social functioning score mean change from baseline to week 12	5.65*	4.44	3.07
Role emotional score mean change from baseline to week 12	3.87	2.68	3.60
Mental health score mean change from baseline to week 12	1.77	2.18	1.75

DSPCC, diclofenac submicron particle containing capsules; TID, three times daily; BID, twice daily; SF-36, Medical Outcomes Survey Short Form 36 (SF-36), version 2.

*P ≤ 0.03. Bold values represent scores ≥ minimally clinically important difference (≥2.5 for physical component score; ≥5.0 for SF-36 domain scores).

Data above presented as means however, all P-values are compared with placebo and calculated from least-squared mean changes from baseline.